MISCELLANEOUS PAPERS

****

Centre for Entomological Studies Ankara

****

No 202 **03 January 2020** **ISSN 1015-8235**

Diloba caeruleocephala in SE Turkey with new larval food-plant and faunistic records (Lepidoptera, Noctuidae)

Muhabbet Kemal[1] Sibel Kızıldağ Ahmet Ömer Koçak

Abstract: *Diloba caeruleocephala* in SE Turkey with new larval food-plant and faunistic records (Lepidoptera, Noctuidae). *Misc. Pap*. 202: 1-5, 9 figs. 1 map.
In this paper, new larval food-plant of *Diloba caeruleocephala* (Noctuidae) and two new provincial records are given. Habitat, caterpillar, pupa and adults of the species are illustrated. Distributional map is also added.

Key words: *Diloba caeruleocephala*, Noctuidae, Lepidoptera, bionomy, food-plant, *Frangula alnus*, Rhamnaceae, Hakkari, Turkey.

In the present paper, larval food-plant of *Diloba caeruleocephala* is given together with its habitat **(Fig.1)** and other faunistic information.

During their field studying in the Zap valley (Hakkari Province), the authors collected several *Diloba* caterpillars on the leaves of *Frangula alnus* ssp. *pontica* **(Figs. 2-4)** (det. M. Fırat). First result of the faunistic activities was published by the authors (Kemal & Koçak, 2018). This species was omitted in that publication; therefore it is here reported faunistically with its larval food-plant and illustrations for the first time.

Bionomy **(Figs. 5-9)**: As the larval food-plant of *Diloba caeruleocephala*, the following genera and species are known from the well known database on this subject in the internet: *Cotoneaster, Crataegus, Malus, Prunus cerasus, P. dulcis, P. padus, P. persica, P.spinosa, Pyrus, Sorbus aucuparia, S. hybrida, S. intermedia* (all Rosaceae).[2] According to our modest database information, the caterpillars of this species live on *Amygdalus* [Rosaceae], *Quercus coccifera* [Fagaceae], *Crataegus, Prunus spinosa, Malus* [Rosaceae] (Staudinger,1879; Spuler,1903, *et seq*.) (Koçak & Kemal, 2007a: 76). The present record of the larval food-plant of *Diloba caeruleocephala* is *Frangula alnus* ssp. *pontica,* which belongs to the family Rhamnaceae. This species and its family have not been reported so far for this purpose. Dates of the collecting larvae, developing of the pupae, and emerging of the adults are mentioned in the explanations of the figures.

Previously, Mann (1862: 370) reported "Schlehen" [*Prunus spinosa*] and "Mandelbaum" [*Amygdalus*] as larval food-plant of *Diloba caeruleocephala* from Bursa. Similarly, Lederer (1865: 62) mentioned "*Quercus coccifera*" as larval food-plant from western Anatolia [Bozdağ]. Also Staudinger (1879: 370) reported "Mandelbaum" as larval food-plant from Amasya. Bolu & Özgen (2007) mentioned the early stages of this species, obtained from *Amygdalus communis* in the vicinity of Diyarbakır (SE Turkey).

[1] Dr Muhabbet Kemal & Dr Sibel Kızıldağ - Van Yüzüncü Yıl University, Faculty of Science, Dept. of Biology, Campus, Van / Turkey.
e-mails: muhabbet_kemal@yahoo.com.tr & sibelkizildag@yyu.edu.tr
Prof. em Dr Ahmet Ömer Koçak, c/o Yüzüncü Yıl University, Faculty of Science, Dept. of Biology., Van / Turkey.
e-mail: cesa_tr@yahoo.com.tr

[2] Database of the World's Lepidopteran Hostplants:
https://www.nhm.ac.uk/our-science/data/hostplants/search/list.dsml?searchPageURL=index.dsml&Familyqtype=starts+with&Family=&PFamilyqtype=starts+with&PFamily=&Genusqtype=starts+with&Genus=Diloba&PGenusqtype=starts+with&PGenus=&Speciesqtype=starts+with&Species=caeruleocephala&PSpeciesqtype=starts+with&PSpecies=&Country=&sort=Family [access on 1th January,2020].

In conclusion, caterpillars of this species live on various species of the families, Rosaceae, Fagaceae, and Rhamnaceae with *Frangula alnus* ssp.*pontica* [present record].

Current faunistic and taxonomic results of this species are extracted from our database as follows:

Diloba Boisduval,1840

Synonymy: #*Heteromorpha* Hübner,1808; #*Heteromorpha* Hübner,1822; *Diloba* Boisduval,1840
Original Reference: *Diloba* Boisduval,1840, Genera Index meth. Eur. Lepid.: 88. Type-species: *Phalaena caeruleocephala* Linnaeus,1758, by monotypy.

Diloba caeruleocephala (Linnaeus,1758)

Synonymy: *caeruleocephala* Linnaeus,1758; #*caerulocephala* Linnaeus,1761; #*coeruleocephala* De Freina & Witt,1987
Original Reference: *Phalaena (Bombyx) caeruleocephala* Linnaeus,1758, Syst. Nat. (Edn.10)1: 504.
Type(s): [Europa]. Lectotype ♂, designated by Mikkola & Honey (1993: 116).
Range (as code): **ES Mu FR Co Si IT MT IE GB BE NL LU DE Bw CH AT PL CZ SK HU RO YU AL BG GR TR DK NO SE FI EE LV LT RU Cc AZ Kir Ro MD UA Lvv BY LB IL Pa JO IR Elb Th 05 06 13 16 21 22 24 25 30 31 46 50 56 62 63 64 70 05A 06E 06Ea 06K 06Kb 06R 06Rb 06Rq 13C 13Cd 16A 30B 30Bt1 30Bz 56F 56Fo 62G 62Gb 63E 64F 70C 70Cb (Map 1)**
Flight activity of the adult: nocturnal in autumn.
Number of the annual generation: Univoltin.
Presence of the species: autochthonous.
Phagism: phytophag.
Bionomy: mentioned above.
Previous illustration in the Cesa publications: Koçak & Kemal, 2007b, Cent. ent. Stud., Memoirs 3/4: pl.35 fig.13 [larva] from Ankara Prov., Çal Dağı 1100m, 25 v.1989, A.Koçak.
Subspecific identity: There is a single subspecies besides from the nominate form: *Diloba caeruleocephala* ssp. *armena* Staudinger,1871. Especially the population of East Turkey may belong this subspecies. However, the genetic distance between nominate subspecies and *armena* will be investigated.
Original Reference: *Diloba caeruleocephala* var. *armena* Staudinger,1871, Catalogue lepid. eur. (2): 76, 1024a. Type(s): "Arm".
Range (as code): **TR LB IL Pa JO IR Elb Th**
Material studied: 1♂. SE Turkey, Bitlis Province, Bitlis Province, Başor valley, Ağaçköprü 1350m [13Cd], 1.xi.2013, M. Kemal & A.Koçak leg. - 1♂1♀. Hakkari Province, Sulphur valley 1620m (30Bt1), ex larvae emerged on 8.xi.2018, M.Kemal & A.Koçak leg. (Cesa).
Remarks: New faunistic records for the provinces Bitlis and Hakkari.

Acknowledgements
We sincerely thank to Mehmet Fırat (Van Yüzüncü Yıl University, Van, Turkey) for his kind help in identifying *Frangula* species.

References

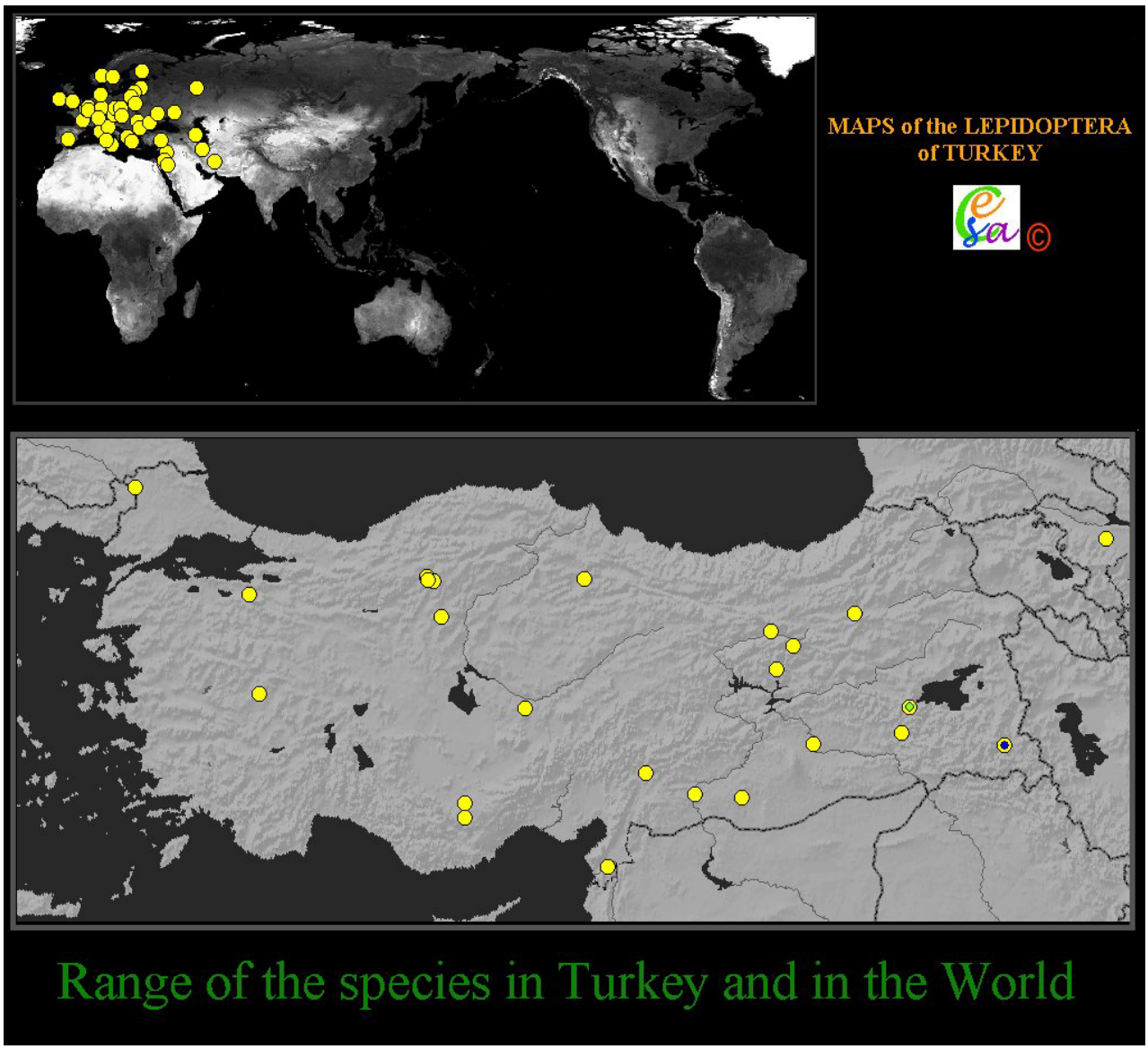
Bolu,H. & I.Özgen, 2007. Life history and biology of *Diloba caeruleocephala* (figure of eight) (Lepidoptera, Noctuidae). *Belg. J. Zool.* 137 (2): 133-136.
Kemal, M. & A.Ö.Koçak, 2018. First faunistic results of the Lepidoptera of Zap Valley in Hakkari Province (SE Turkey). *Priamus* 16 (4): 119-199, 8 figs.
Koçak,A.Ö. & M. Kemal, 2007a**.** Revised and annotated checklist of the Lepidoptera of Turkey. *Priamus* Suppl . 8: 1-150, 2 Tables.
Koçak,A.Ö. & M. Kemal, 2007b. Results of the International Projects of the CESA on the Lepidoptera of the World- I. *Cent. ent. Stud., Memoirs* 3-4: v+ 1-1989, 49 Pls.
Lederer,J., 1865**.** Excursion Lépidoptérologique en Anatolie. *Annls Soc. ent. Belg*. 9: 49-81.
Mann,J., 1862. Verzeichniss der im Jahre 1851 bei Brussa in Kleinasien gesammelten Schmetterlinge. *Wien. ent. Monatsschr*. 6: 356-371.
Staudinger,O., 1879**.** Lepidopteren-Fauna Kleinasien's. *Horae Soc. ent. ross*. 14: 176-482.

Fig. 1 - Habitat at Sulphur valley, Hakkari Province, SE Turkey with *Frangula* trees 1620m, 17 v.2018, M.Kemal (Cesa)

Figs. 2-4 - *Frangula* tree at Sulphur valley 1620m, 17 v.2018, (Hakkari Province, SE Turkey) (left). *Frangula alnus* ssp. *pontica* and its fruits (right). M.Kemal (Cesa)

Figs. 5-7 - Caterpillars on *Frangula alnus* on 17 May, 2018 (top), pupa from various sides and anal region. Pupation on 6 June, 2018. M. Kemal (Cesa)

Figs. 8, 9– Emerged in the laboratory: male (left) and female (right) on 8 November, 2018. M. Kemal (Cesa)



Map 1 – *Diloba caeruleocephala*. Dark blue centered yellow mark belongs to the present record of Hakkari, while green centered to Bitlis.

MISCELLANEOUS PAPERS **ISSN 1015-8235**

Miscellaneous Papers is a peer reviewed serial of the Centre for Entomological Studies Ankara, established in **1989**. It appears at irregular interval in a year, as PDF format and includes original articles of the research workers of the Centre, regarding on various subjects on Entomology (taxonomy, nomenclature, checklist, fauna, biodiversity, distribution, biogeography, ecology, insect-plant interactions, bionomy, and behaviour).
The CESA is a non-profit group, no royalties will be paid to authors of contributions. Papers accepted become the copyright of the related serial.
Miscellaneous Papers is currently archived online at "Internet Archive", in accordance with the publication rules of the ICZN. It is an open-access serial, distributed under the terms of the "*Creative Commons Attribution License*", which permits free use, and distribution in any medium, provided the original author(s) and source are credited.

Centre for Entomological Studies Ankara

(A scientific Consortium)
(co-operation of research workers for pure-scientific, not commercial purpose)

Web Page of the Cesa: http://www.cesa-tr.org/
Scientific Serials: Priamus & Priamus Supplement (print and online versions) (ISSN 1015-8243)[3], Miscellaneous Papers (print and online versions) (ISSN 1015-8235) [4], Memoirs (print and online versions) (ISSN-8227)[5] DVD Films[6], Iconographia Insectorum[7] (online), Cesa Publications on African Lepidoptera (online)[8], Cesa News (online)[9], Cesa Books (online) [10]
Owners / Sahipleri - Editors / Yayıncılar: Prof. em Dr Ahmet Ömer Koçak (c/o Van Yüzüncü Yıl University, Van, Turkey), Asst. Prof. Dr Muhabbet Kemal Koçak (c/o Van Yüzüncü Yıl University, Van, Turkey).
Editorial Board of all Scientific Serials of the CESA / Bütün Bilimsel Yayınların Yayın Kurulu: Insecta, taxonomy, nomenclature, ecology, faunistics: Prof. em Dr Ahmet Ömer Koçak (c/o Van Yüzüncü Yıl Üniversitesi, Turkey), Asst. Prof. Dr Muhabbet Kemal Koçak (Van Yüzüncü Yıl University, Turkey).
Chief referees of all Scientific Serials of the CESA: Prof. em Dr Ahmet Ömer Koçak & Asst. Prof. Dr Muhabbet Kemal Koçak: Insecta, taxonomy, nomenclature, fauna, ecology, catalogues, checklists of the Old World.
Expert referees according to the subject areas: Dr Peter Huemer (Austria) and Dr. Ole Karsholt (Denmark): Gelechioidea, and some other Microlepidoptera groups in Palaearctic (Lepidoptera). Mag. Peter Buchner (Austria): Depressariidae (Lepidoptera). Dr J. B. Heppner (U.S.A.): Microlepidoptera of Nearctic and Neotropical. Dr G. Baldizzone (Italy): Coleophoridae (Lepidoptera). Dr V. Korneyev (Ukraine): Tephritidae, Pyrgotidae, Ulidiidae (Diptera). Prof. Dr Y.G.Verves (Ukraine): Sarcophagidae (Diptera). Dr Daniel Burckhardt (Switzerland): Psyllidae (Homoptera). Prof. Dr E. Heiss (Austria): Hemiptera. Dr R. Ehrmann (Germany): Mantodea. Prof. Dr Mustafa Ünal (Bolu, Turkey): Orthoptera. Prof. Dr Hüseyin Özdikmen (Turkey): Coleoptera. Prof. Dr Suat Kıyak (Turkey): Hemiptera.
Plant taxonomy, flora and vegetation: Assoc. Prof. Dr Murat Ünal, Asst. Prof. Dr Mesut Pınar, (Yüzüncü Yıl University, Van, Turkey).
Molecular studies: Asst. Prof. Dr Sibel Kızıldağ (Van Yüzüncü Yıl University, Van, Turkey).
Editorial policy: the submitted manuscript is evaluated by the Chief Editor and Referee. In case of need, the manuscript is sent to expert referees according to the subject areas.

ALL RIGHTS RESERVED

Correspondences should be addressed to: Prof. em Dr Ahmet Ömer Koçak, c/o Yüzüncü Yıl University, Fen Fakültesi, Biyoloji Bölümü, Kampus, Van / Turkey. - e-mail: cesa_tr@yahoo.com.tr

All the serials of the Cesa are archived regularly by the Internet Archive (300 Funston Ave., San Francisco, CA 94118, U.S.A.), in accordance with the rules of the International Codes of Zoological Nomenclature (ICZN)
https://archive.org/

also recorded regularly by the Zoological Record, Thomson Reuters, Enterprise House, Innovation Way, Heslington, York, YO10 5NQ, United Kingdom, https://clarivate.com/

[3] http://www.cesa-tr.org/Pri.htm
[4] http://www.cesa-tr.org/Miscell.htm
[5] http://www.cesa-tr.org/Memoirs.htm
[6] http://www.cesa-tr.org/CDF.htm
[7] http://www.cesa-tr.org/Icon.htm
[8] http://www.cesa-tr.org/CPAL.htm
[9] http://www.cesa-tr.org/Cesanews.htm
[10] http://www.cesa-tr.org/Cesabooks.htm